Productivity and Plant Selection in the Ready-Mix Concrete Industry

Competition plays a key role in the evolution of an industry's productivity, and this productivity is a critical policy variable since it affects society's ability to provide resources to all of its members. Even in the absence of competitive pressures, firms have strong incentives to lower their costs of production in order to raise their profits. However, when rivals can lower their marginal costs and capture a larger share of the market, this strengthens a firms incentives to increase its efficiency. Moreover the entry of new and potentially more productive plants can also induce the exit inefficient incumbents.

I look at the effect of competition on productivity in the Ready-Mix Concrete sector (NAICS 327300) from 1963 to 2001 using plant level data from the U.S. Census Bureau Research Data Program from the Longitudinal Business Database and the Census of Manufacturing. Because of high transportation costs for concrete, I can identify the relevant set of competitors as those plants located within a 90 minute driving time.

Based on the entry and exit decision of over 5000 Ready-Mix Concrete Plants, I find that 1) plants with high productivity are less likely to exit, 2) plants are more likely to exit in market with high productivity plants and 3) there is less entry in markets with higher productivity. I use these "reduced-form" facts to motivate the estimation a model of dynamic competition for the ready-mix concrete industry using Aguirregabira and Mira's Nested Pseudo-Likelihood Algorithm that explicitly includes a plant's observed productivity as into the firm's state and incorporates strategic considerations into a firm's decision. This model allows me to distinguish the productivity distribution that would occur in monopolistic industry versus the industry with competition. I then use the model to simulate the effect of entry subsidies on the long run distribution of the industry's productivity, and evaluate the welfare effect of this policy.